COSMIC NOISE ABSORPTION MEASUREMENTS IN SUBAURORAL LATITUDES DURING JULY–AUGUST 1982 (ABSTRACT)

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Measurements of ionospheric absorption have been routinely made at the research base of the GDR in the vicinity of the Soviet Antarctic station Novolazarevskaya (70.77°S, 11.83°E) on the frequency 22.4 MHz with a selective receiver and a corner antenna since 1976 and on the frequency 32.4 MHz with a riometer and a 5 elements Yagi antenna since 1978 for a purpose of monitoring ionospheric disturbances due to energetic particle precipitation. Absorption values were obtained by referencing the daily event readings to a provisional "quiet-day" curve modified by the daily values taken some days before the disturbed period. For each hour the absorption during the first minute have been calculated.

For a comparison were used the first minute riometer absorption values of the Finnish station Sodankylä (67.42°N, 26.40°E) on the frequencies 27.6; 40 and 50 MHz.

A very strong cosmic noise absorption occurred during the period July 13 to 19, 1982. The disturbed period ended on August 15, 1932. The mean D_{st}-value on July 14 was -214γ. Since 1957 mean D_{st}-values greater than -200γ were observed only on three days (on 5.9.57 D_{st}; -208γ, on 11.2.58 D_{st}: -228γ, on 26.5.67 D_{st}: -243γ). The figure shows the time variations of the mean daily cosmic noise absorption values of Novolazarevskaya and Sodankylä Stations for different frequencies and the geomagnetic equatorial D_{st}-values during July–August 1982 (Fig. 1).

From the comparison of the results observed at the two stations, the following conclusions may be drawn:

1) The time variations of the strong cosmic noise absorption at the stations on both hemispheres are very similar;

2) Any influence of the day-light conditions in the ionosphere cannot be observed because the stations are not lie in conjugate areas;

3) As expected the absorption values are always decreasing with increasing frequency, but they show different fine structure for time variations, which could be an information about different energy spectrums of the precipitating particles.

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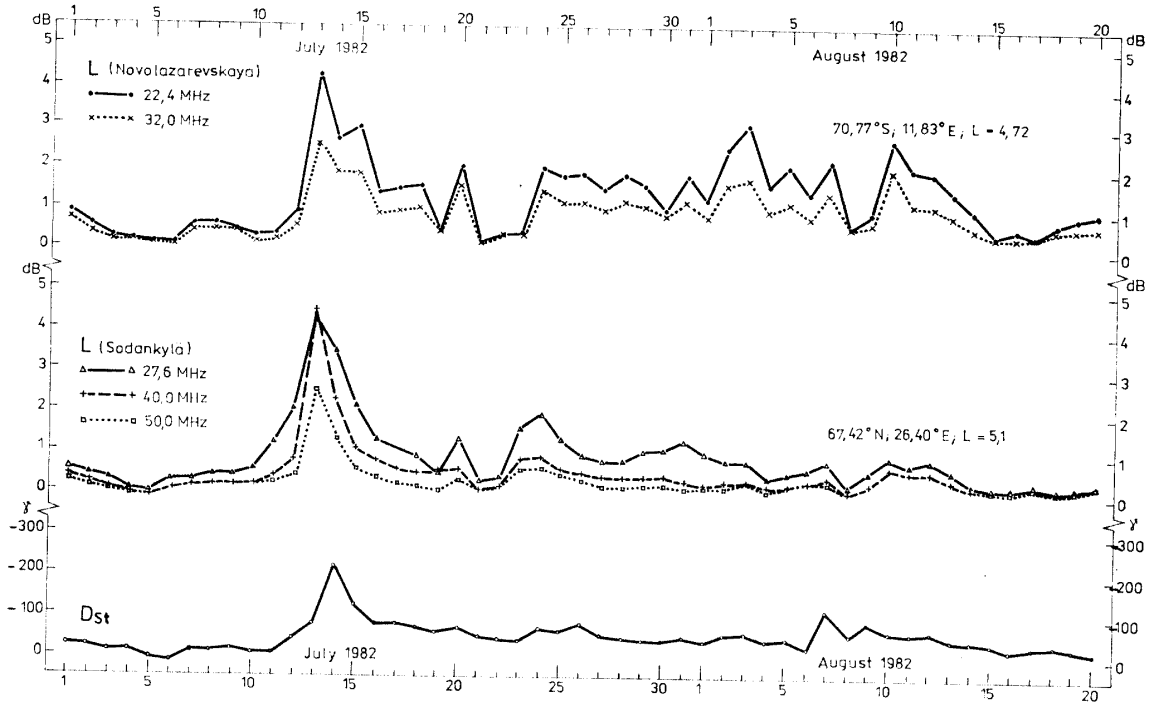

Fig. 1. Mean daily cosmic noise absorption values and geomagnetic equatorial D_{st}-values for July–August 1982.